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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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DAVID W. WONG 46 WILLOWBROOK ROAD THORNHILL, ON L3T 4W9 CANADA			EXAMINER FICK, ANTHONY D	
			ART UNIT 1753	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/694,222

Applicant(s)

SHAH, REZA H.

Examiner

Anthony Fick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-13 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. Applicant's amendments to the claims have overcome the previous rejections under 35 U.S.C. 112 second paragraph. The rejections are therefore withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 16 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims require a thermopile that is a heat pipe comprising two-phase material and being electrically connected to the super capacitor for providing the operating voltage. Applicant's original specification only describes a plurality of semiconductor elements, P-type and N-type, electrically connected together to form a thermopile (paragraph bridging pages 4 and 5, and figures 1 and 2). The specification also describes the heat pipe for transferring heat energy from a spaced apart heat source to the conversion system (page 6 and figures 3 and 4) and makes no mention of connecting electrical contacts to the heat pipe or using the heat pipe as the thermopile. As these limitations are not supported by the original disclosure, the claims are deemed to be new matter.

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4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 13, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 13 recites the limitation "said air circulating means" in line 5. There is insufficient antecedent basis for this limitation in the claim.

7. Claims 16 and 17 recite the limitation of a heat pipe as the thermopile for the system. It is unclear how the heat pipe containing two-phase material can produce the voltage required by the claims simply by heating one end of the heat pipe. Therefore it is unclear how the heat pipe of the claims can meet the remaining limitations.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maher, Jr. (U.S. 5,931,655) in view of Buezis et al. (U.S. 6,588,419).

Maher, Jr. discloses a temperature control system with thermoelectric and rechargeable energy sources.

Regarding claim 9, the control system comprises a transducer adapted to generate voltage from a heat source, thermoelectric generator means 40 in the figures,

an inverter charger for increasing the voltage output, transformer T1, a charge storage means for receiving the voltage and storing it, rechargeable energy source 60, control means to regulate charging of the storage means, control means 30, and an output means to deliver the charge from the storage means to a load, wires leading from 60 in any figure (see figures 1, 2 and 3 and columns 3 and 4). Maher, Jr. discloses the transducer is a thermoelectric device; preferably a thermopile (column 3, lines 4-10) and the rechargeable means can be a super-capacitor (column 4, lines 42-43). Maher, Jr. further discloses the heat source is a pilot burner flame, F1 (column 2, lines 60-65). Figure 3 shows the spark ignition of the pilot flame is connected to the control means, the control means thus regulating to turn the pilot burner on at selected times, and actuating the spark generator to turn on the pilot burner.

The differences between Maher, Jr. and the claims are the requirements of a specific location for the thermopile; a heat exchanger attached to the thermopile and an air circulation means. While Maher, Jr. describes a temperature control system for a gas-fired appliance, the patent does not disclose configurations within such appliances.

Buezis teaches a thermoelectric device for a gas-fired appliance. As shown in figure 1, the thermopile is located on an opposite surface of a flue wall from the burner heating the wall. The figure further shows a heat exchanger attached to the thermopile and an air circulation means for passing air through the heat exchanger to a room to be heated.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the configuration, heat exchanger, and air circulation

means of Buezis with the temperature control system of Maher, Jr. because the system of Buezis allows heating of room air without line electrical connection (abstract) and the heat exchanger and air circulation means cool the opposite side of the thermopile thus improving the electrical production efficiency. Because Maher, Jr. and Buezis are concerned with gas-fired appliances, one would have a reasonable expectation of success from the combination. Thus the combination meets the claims.

10. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maher, Jr. (U.S. 5,931,655) in view of Darbonne, SR. (U.S.P.G.Pub 2003/0226561).

Maher, Jr. discloses a temperature control system with thermoelectric and rechargeable energy sources.

The control system comprises a transducer adapted to generate voltage from a heat source, thermoelectric generator means 40 in the figures, an inverter charger for increasing the voltage output, transformer T1, a charge storage means for receiving the voltage and storing it, rechargeable energy source 60, control means to regulate charging of the storage means, control means 30, and an output means to deliver the charge from the storage means to a load, wires leading from 60 in any figure (see figures 1, 2 and 3 and columns 3 and 4). Maher, Jr. discloses the transducer is a thermoelectric device; preferably a thermopile (column 3, lines 4-10) and the rechargeable means can be a super-capacitor (column 4, lines 42-43). Maher, Jr. further discloses the heat source is a pilot burner flame, F1 (column 2, lines 60-65). Figure 3 shows the spark ignition of the pilot flame is connected to the control means,

the control means thus regulating to turn the pilot burner on at selected times, and actuating the spark generator to turn on the pilot burner.

The difference between Maher, Jr. and the claims is the requirement of a specific heating configuration.

Darbonne, SR. teaches a furnace heating apparatus that includes a pilot burner and a combustion area utilizing fuel pellets such as wood (paragraph 0003). The furnace heats air to circulate within a room. The furnace is also attached to a flue pipe steam generator that generates vapor from the heat source, and the vapor drives a steam turbine (paragraph 0064).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the temperature control system of Maher, Jr. with the furnace apparatus of Darbonne, SR. because the system of Maher, Jr. provides a reliable and efficient system for controlling and powering a temperature control system and the furnace of Darbonne, SR. is a higher efficiency furnace that burns less fuel and has a better heat exchanger than conventional fireplaces. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to utilize the heat from the combustion chamber as well as the pilot flame to power the thermoelectric device as more heat leads to more electrical generation. Because Maher, Jr. and Darbonne, SR. are both concerned with heating devices including pilot burners, one would have a reasonable expectation of success from the combination.

Regarding claim 12, the furnace of Darbonne, SR. is a wood fire.

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11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maher, Jr. in view of Darbonne, SR. as applied to claims 11 and 13 above, and further in view of Gardner (U.S. 4,213,444).

The disclosure of Maher, Jr. in view of Darbonne, SR. is as stated above for claims 11 and 12.

The difference between Maher, Jr. in view of Darbonne, SR. and the claim is the requirement of using the turbine output to operate the air circulation means.

Gardner teaches a fireplace heater unit that heats water into steam, passes the steam through a turbine that transmits to a fan or blower (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the turbine motion to operate a blower as in Gardner for the fireplace of Maher, Jr. in view of Darbonne, SR. because the steam driven turbine provides power for the blower even without electrical connections. Thus the fireplace is more energy efficient and can operate in the event of a power outage, further improving the utility of the device. Because Maher, Jr., Darbonne, SR. and Gardner are all concerned with heating systems, one would have a reasonable expectation of success from the combination. Thus the combination meets the requirements of the claim.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maher, Jr. in view of Buezis as applied to claims 9 and 10 above, and further in view of Caillat et al. (U.S. 6,563,039).

The disclosure of Maher, Jr. in view of Buezis is as stated above for claims 9 and 10.

The difference between Maher, Jr. in view of Buezis and claim 15 is the requirement of a specific thermopile.

Caillat teaches thermoelectric devices as shown in figure 2. The thermopile comprises a plurality of pairs of rods of different types of semiconductor materials (P and N blocks) spaced from one another and extending between two heat conductive electrical insulating blocks having a hot side and a cold side with the junctions providing an operating voltage for a load.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the thermopile arrangement of Caillat within the device of Maher, Jr. in view of Buezis because the use of the arrangement is well known within the art as a more efficient alternative to metal thermocouples in producing power from a temperature gradient. Thus utilizing the materials and configuration of Caillat will produce a more efficient device than the metal thermocouples of Maher, Jr. Because Maher, Jr. in view of Buezis and Caillat are concerned with thermoelectric production of power from a temperature gradient, one would have a reasonable expectation of success from the combination. Thus the combination meets the claim.

Response to Arguments

13. Applicant's arguments filed June 19, 2007 have been fully considered but they are not persuasive. Applicant argues that the Maher reference is not capable of producing a voltage to directly drive a high current resistive load of a blower as in applicant's invention. With respect to claim 9, the examiner respectfully disagrees. The claim only requires a load coupled to the super capacitor, operative by the operating

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voltage of the super capacitor. Maher, Jr. discloses several elements of the control device that are powered by the super capacitor, thus a load is coupled to the super capacitor as required by the claims. Further, the reference to Buezis teaches use of the thermopile to power a blower for the gas fireplace. Therefore the combination of the two references is capable of producing enough power for a blower in heating equipment as required in claim 10. Applicant further argues that the references are directed to heating systems, which are operated by external electrical supply, and when there is no electrical supply the systems would not operate. This argument is not considered persuasive because Buezis teaches a gas appliance for warming room air without line electrical connection (Buezis abstract) and applicant's claims do not have any limitations that require no external electrical supply. Applicant also argues that the present invention utilizes the heat from an "operating-on-demand" pilot burner to generate electrical supply, a concept entirely different from the cited prior art. Therefore the claims are not readable on the cited references. The examiner respectfully disagrees. Applicant has not cited any structural differences between the "operating-on-demand" pilot burner and the pilot burners utilized within the references. It is the position of the examiner that the pilot burners within Maher, Jr. and Buezis for example are structurally the same as applicant's pilot burners, and can be considered to be operating on demand; the demand being that the pilot burner needs to operate all the time. As the references have the same structures as applicant's claimed invention, the references are deemed to meet the claim requirements. Therefore the rejections are maintained.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick *ADF*
AU 1753
August 29, 2007


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